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**DOPPLER et al.**(10) **Pub. No.: US 2014/0334387 A1**(43) **Pub. Date: Nov. 13, 2014**(54) **METHOD, APPARATUS, AND COMPUTER  
PROGRAM PRODUCT FOR PROTECTING  
SHARED TRANSMISSION OPPORTUNITY**(52) **U.S. Cl.**CPC ..... **H04L 5/0053** (2013.01); **H04W 72/0446**  
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(57)

**ABSTRACT**

Embodiments of the invention provide signaling mechanisms for wireless networks composed of a large number of stations. An example method embodiment comprises: receiving, by a first apparatus, a request-to-send frame for a transmission opportunity from a second apparatus; transmitting, by the first apparatus, a first clear-to-send frame for a shared transmission opportunity to the second apparatus; receiving, by the first apparatus, a second clear-to-send frame as response to the first clear-to-send frame from a third apparatus; receiving a data frame from the second apparatus during the shared transmission opportunity; and forwarding the data frame to the third apparatus during the same shared transmission opportunity.

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